

MALAWI

Community Health Supply Chain Baseline Assessment Report

May to June 2010



GOVERNMENT OF MALAWI

MALARIA
ALERT
CENTRE 



Supply Chains & Community Case Management

Malawi

**Community Health Supply Chain
Baseline Assessment Report**

May to June 2010

SC4CCM Project

The Improving Supply Chains for Community Case Management of Pneumonia and Other Common Diseases of Childhood Project is funded by the Bill & Melinda Gates Foundation under grant agreement no. OPP1002868, beginning November 2, 2009. The grant is implemented by JSI Research & Training Institute, Inc. The project aims to demonstrate that supply chain constraints at the community level can be overcome, and that doing so may yield significant improvements in the effectiveness, scale, and impact of CCM. SC4CCM will identify, demonstrate, and institutionalize supply chain management (SCM) practices that improve the availability and use of selected essential health products for treating children under five in community-based programs.

Recommended Citation

SC4CCM. 2010. *Malawi Community Health Supply Chain Baseline Assessment Report*. Arlington, Va.: SC4CCM.

Cover photo: Health surveillance assistant's drug box in Malawi.



JSI Research & Training Institute, Inc.
1616 Fort Myer Drive, 11th Floor
Arlington, VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
Internet: www.jsi.com

Contents

Acronyms	v
Introduction.....	3
Background.....	5
Purpose and Objectives of the Assessment.....	7
Methodology.....	9
LIAT Survey Design.....	9
Data Management and Analysis	12
Results Dissemination	12
Summary of Findings.....	13
Describing the Sample	13
Findings by Goal and Precondition.....	15
<i>Main Goal Objective: HSAs have usable and quality medicines available when needed for appropriate treatment of common childhood illnesses</i>	<i>15</i>
<i>Precondition 1: Necessary, usable, quality CCM products are available at HSA resupply point(s)</i>	<i>17</i>
<i>Precondition 2: HSAs, or persons responsible for HSA resupply know how, where, what, when and how much of each product to requisition or resupply and act as needed</i>	<i>21</i>
Precondition 3: HSAs have adequate storage: correct conditions, security and adequate space	24
Precondition 4: Transportation of products between HSAs and resupply points	25
Pre-condition 5: HSAs are motivated to perform their roles in the CCM product supply chain.....	28
Recommendations.....	33
Appendix A: List of Contacts	35
List of LSAT Workshop Participants.....	35
Appendix B: SC4CCM Theory of Change	37
Appendix C: Map of Product Availability of 3 Key CCM Products in Malawi.....	39
References.....	41

Figures

Figure 1: Number Products HSAs Manage vs. Number Products in Stock on the Day of Visit	14
Figure 2: The Main Country Level Objective and Five Main Preconditions.....	15
Figure 3: Product Availability among HSAs who Manage the Product on the Day of Visit, by Selected Districts.....	16
Figure 4: Percentage of HSAs who manage individual health products that had the product in stock on the day of visit.....	17
Figure 5: Percentage of HSAs and resupply points with cotrimoxazole 480mg tablets in stock on day of visit.....	19
Figure 6: Percentage of HSAs and resupply points with LA 1x6 tablets in stock on day of visit	19
Figure 7: Product Availability of Three Key CCM Products at health centres and HSAs in Kasungu, Ntchisi and Salima	20
Figure 8: Availability of SOPs on the Day of Visit	21
Figure 9: Types of Reporting Forms used by HSAs	22
Figure 10: Percentage from Health Centres and District Pharmacies with Discrepancy between Physical Count & Stock Card Balance.....	23
Figure 11: Percentage of HSAs that use each type of transport compared with the distances and road conditions between the HSA and their resupply point.....	27
Figure 12: Reported Problems Collecting / Receiving Products (multiple responses)	28
(n = 76 HSAs who reported problems)	28
Figure 13: Areas of Supervision reported by HSA Supervisors	29
Figure 14: Supervision and Feedback on SCM of HSAs who manage products (n=139) by district.....	30
Figure 15: Self-Reported Job Satisfaction (1-5 with 5 being highest satisfaction).....	30
Figure 16: Reported Motivation Factors for HSAs.....	31

Tables

Table 1: Sample Size	11
Table 2: Skills and Capacity	13
Table 3: HSAs who had a drug box vs. HSAs who manage health products	13
Table 4: Number of HSAs who reported managing individual products.....	14
Table 5: Stock levels of main child health products at HSA level.....	16
Table 6: Percentage of facilities and HSAs in stock of each key product on the day of the visit by region	18
Table 7: Percentage of HSAs who manage health products that reported being trained in the following supply chain tasks.....	21
Table 8: How Health Centres report HSA logistics data is reported to the higher level	23
Table 9: Percentage of HSAs who manage health products who met the following storage conditions (six storage conditions assessed for HSAs).....	25
Table 10: HSA Travel Time to Resupply Point by Transport Type	26

Acronyms

ACT	Artemisinin-based combination therapy
CCM	community case management
CHAM	Christian Health Association of Malawi
CHW	community health worker
DHMT	District Health Management Team
DHO	district health officer
GOM	Government of Malawi
HC	health centre
HSA	Health Surveillance Assistant
HTSS	Health Technical Support Services
IMCI	Integrated Management of Childhood Illnesses
JSI	JSI Research & Training Institute, Inc.
KII	key informant interviews
LA	lumefantrine/artemether
LIAT	Logistics Indicator Assessment Tool
LMIS	logistics management information system
LSAT	Logistics System Assessment Tool
MAC	Malaria Alert Centre
MDHS	Malawi Demographic and Health Survey
MOH	Ministry of Health
ORS	oral rehydration solution
RMS	Regional Medical Stores
SC4CCM	Supply Chains for Community Case Management
SCM	supply chain management
TOC	Theory of Change
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Acknowledgements

This baseline assessment is the collaborative work of the Malawi Ministry of Health, Supply Chains for Community Case Management project managed by JSI Research & Training Institute, Inc., and the Malaria Alert Centre from the Malawi College of Medicine.

The JSI/SC4CCM Project Team extends its profound appreciation to MOH staff at Central Medical Stores, Regional Medical Stores, the District Health Offices, Health Centres, as well as community case management partner organizations and all stakeholders who provided very valuable information as part of the Logistics System Assessment Tool interviews, Logistics Indicator Assessment Tool, Key Informant Interviews, and the qualitative interviews with District Health Officers. In addition, JSI/SC4CCM Team wishes to acknowledge, with appreciation, the leadership and support provided by MOH Deputy Director for Health Technical Support Services (HTSS) – Pharmaceuticals, Mr. G. Kadewele and IMCI Programme Manager, Mr. H. Nsona throughout the entire process.

Finally, special thanks must be given to the data collectors who dedicated two months to visiting and collecting information from Health Surveillance Assistants in remote locations across Malawi, as well as other levels of the supply chain system.

The data collected in this assessment has provided very valuable information that can now be used to strengthen the supply chain that provides medicines to these Health Surveillance Assistants so that they may continue to provide services for sick children in these remote locations.

Executive Summary

The Improving Supply Chains for Community Case Management of Pneumonia and Other Common Diseases of Childhood (SC4CCM) project is a learning project focused on finding affordable, simple, and sustainable supply chain solutions that address the unique challenges of community health workers. The project goal is to demonstrate that product availability can be significantly improved at the lowest levels of the supply chain, thereby contributing to improved child health in communities. To achieve this goal, in Ethiopia, Malawi and Rwanda, the project will test innovations to generate knowledge that can be put into broader practice for supply chain operations, financing, and advocacy. The project will complement the work of the government, supply chain technical assistance and implementation partners by sharing what is learned and serving as a catalyst to help its partners to take promising solutions to scale.

The SC4CCM project builds on already existing government commitment and partner support towards improving child health in communities through the community case management program, and seeks to support investments in the identification of innovative supply chain solutions through testing and knowledge development, such that significant improvements in community case management (CCM) product availability at community level can be achieved so as to accelerate the government's achievement of child health goals.

In order to understand the CCM product supply chain condition and facilitate identification of where in the CCM product supply chain opportunities for testing interventions exist, a baseline assessment was undertaken in May-June 2010 that covered 10 districts across Malawi's three geographical regions. The actual data collection was sub-contracted to the Malaria Alert Centre (MAC), JSI's evaluation partner in Malawi. Data was collected from a total of 248 HSAs spread out in 10 districts and 80 health centres in the three regions. The main data collection tools used were modified versions of JSI USAID | DELIVER developed facility-based Logistics Indicator Assessment Tool (LIAT) and the Logistics System Assessment Tool (LSAT). Quantitative data collection was undertaken using phones, where enumerators completed pre-formatted electronic questionnaires and immediately transmitted to a central database for analysis.

The main findings from analysis of this data are summarized below:

1. Product availability across the entire pipeline of key products necessary to treat basic childhood conditions, namely pneumonia, malaria, diarrhoea and malnutrition, at the community level was low during the period of the assessment; however, variability existed across districts and products.
2. Ninety percent of HSAs reported cycling or walking long distances over difficult terrain for between one to three hours in order to access their supplies. As the portfolio of products managed by the Health Surveillance Assistants (HSAs) increases, the current bicycle collection system may not remain an optimal option.
3. Logistics data from the village health clinic does not appear to currently move beyond the health centre level. This lack of visibility into community level data reduces the central program's ability to forecast, to monitor the national pipeline and to provide strong evidence in support of advocacy efforts to increase funding for procurement of commodities.
4. HSAs reported moderate levels of supervision and feedback regarding supply chain management, with variability across districts.

Malawi Community Health Supply Chain Baseline Assessment Report

Efforts to increase commitment to maintaining adequate supplies of CCM products should be sought from donors, Ministry-level personnel, program staff and district-level management staff. Enhancing management information systems that provide valuable data for decision making, quantification and planning are needed to support this commitment to improving the availability of CCM products.

The portfolio for HSAs is still expanding, and infrastructure such as transportation and storage capacity must be considered with respect to the potential volumes of products that HSAs are likely to be managing in the foreseeable future.

The SC4CCM project believes it is possible to overcome supply chain constraints in the community at scale and effectively contribute towards improved product availability and child health in the long run. This project's baseline findings offer an opportunity to invest in this direction to better support the government in accelerating its chances of achieving its national and global commitments around improved child health goals, in collaboration and partnership with other CCM players and funding agencies.

Introduction

The Supply Chains for Community Case Management (SC4CCM) project is a five-year initiative funded by the Bill & Melinda Gates Foundation. Implemented by JSI Research & Training Institute, Inc. and initiated in November 2009, SC4CCM is a learning project focused on finding affordable, simple and sustainable supply chain solutions that address the unique challenges of community health workers. The project goal is to demonstrate that product availability can be significantly improved at the lowest levels of the supply chain, thereby contributing to improved child health in communities. To achieve this goal, in Ethiopia, Malawi and Rwanda, the project will test innovations to generate knowledge that can be put into broader practice for supply chain operations, financing, and advocacy. The project will complement the work of the government, supply chain technical assistance and implementation partners by sharing what is learned and serving as a catalyst to help its partners take promising solutions to scale.

In Malawi, SC4CCM in collaboration with Ministry of Health (MOH) and in partnership with Malaria Alert Centre (MAC) conducted a baseline assessment of the supply chain for community case management (CCM) products in May-June 2010. The assessment covered a total of 10 districts sampled from the total population of 29 districts and represented all three regions in Malawi. For each of the ten sampled districts, an average of eight health centres (HC) were randomly selected and at each HC an average of three Health Surveillance Assistants (HSAs) were randomly selected, with a bias towards those that managed a village clinic at the time of assessment.

The objective of the assessment was to collect data pertaining to the supply chain for CCM products by:

1. Gathering quantitative and qualitative data to describe the current state of the supply chain in Malawi for CCM products, including an assessment of the status of the national pipeline for CCM products;
2. Identifying strengths of the CCM supply chain at time of the assessment, as well as highlighting areas that require improvement;
3. Pinpointing drivers of supply chain performance so as to inform an intervention strategy that would test how to significantly improve product availability at the HSA level; and
4. Providing baseline data to measure the impact of interventions on CCM supply chain performance.

The principal focus of the assessment was the ‘final leg’ of the supply chain, from a health centre to the HSA in the community, although there was a clear acknowledgment that the performance of this last leg could not be viewed in isolation from the performance of the rest of the integrated public health supply chain.

The assessment was conducted using two main assessment tools, namely LIAT and LSAT. The LIAT is a well-established, facility-based survey that collects quantitative data through interviews with health staff managing CCM products at all levels of the system, observation of actual practices and conditions and reviews of supply chain records and reports. The LSAT collects qualitative data through gathering a selected group of supply chain managers and policy makers from different levels of the system. The focus group-like interview uses a questionnaire to glean information on the functioning of each aspect of the logistics system, from procurement and organizational structure to distribution and inventory management. Other data was collected through interviews with key informants (KII) from partner organizations providing support for CCM, multiple government agencies and a selection of District Health Officers (DHOs). Appendix A contains the full list of contacts for both the LSAT and KII.

Malawi Community Health Supply Chain Baseline Assessment Report

This report will describe the methodology, including the process employed in collecting data, as well as present the preliminary findings of the assessment and highlight some general recommendations based on the issues identified in the assessment. Secondary analysis of the data will be done in the future and any further findings and recommendations shared with partners.

Background

Children under the age of five years bear a higher burden of disease and death than adults, especially in developing countries including Malawi. Most of the deaths are attributable to preventable and treatable disease conditions such as malaria, pneumonia, diarrhoea and malnutrition.¹ A number of vertical approaches were tried but did not yield significant impact on reduction of child morbidity and mortality since children present with multiple conditions.

The World Health Organization (WHO) in collaboration with United Nations Children's Fund (UNICEF) developed an Integrated Management of Childhood Illnesses (IMCI) model to guide and support the mitigation of the impact on children who present with multiple conditions. As the approach is holistic in nature, focusing on both preventive and curative activities implemented at facility and community level, the Government of Malawi (GOM) adopted the strategy in 1998 and commenced implementation in 1999.²

Millennium Development Goal 4, of which the GOM is signatory, seeks to reduce under-five mortality rates and improve child health. The GOM committed resources and efforts in an effort to achieve Millennium Development Goal 4 and, through the Ministry of Health (MOH), has demonstrated its commitment by developing enabling policies (e.g. the IMCI Policy, etc.), programs (e.g. the CCM Program, etc.), and strategic plans (e.g. the National Pharmaceutical Strategic Plan, the IMCI Strategic Plan, etc.) which have collectively taken health services to the community level in order to increase access to health care at the point where most of the under-five deaths occur. The enhanced role of the HSA cadre to provide curative services for sick children in the community, in addition to their previous roles in prevention and disease surveillance, evidences GOM commitment to addressing child health issues at the point which offers opportunity for maximum impact.

Role of effective supply chain management in child health program goals

For health programs to function well and achieve their goals, a well-coordinated logistics system that facilitates smooth and consistent flow of health products and related information along the entire pipeline, connecting end user needs to decision makers at different levels of the system, is required. To this end, the MOH in Malawi, in collaboration with partners, instituted standard operating procedures for managing health products that include a logistics management information system (LMIS), inventory control procedures as well as guidelines on storage, transportation and general stock keeping. The logistics system in Malawi spans from the central level to the facilities and more recently to village health clinics. Over the years, the government and partners have made substantial investments in resources and attention to improve the supply chain performance up to the HC and continue to do so now.

Unfortunately, the final leg (HC to HSAs at community level) which accounts for the largest percentage of child deaths, has not received as much support in terms of logistics system strengthening compared to the upstream segment of the supply chain. The number of partners on this part of the supply chain remains low, and new ways of improving supply chain system performance are still being explored.

In seeking to improve child health at community level through provision of effective treatment via HSAs, the MOH and CCM partners acknowledged the crucial role that effective supply chain systems play in

¹ Malawi Ministry of Health. 2006. *IMCI Approach Policy For Accelerated Child Survival and Development in Malawi*. Lilongwe, Malawi.

² Malawi Ministry of Health. 2006. *IMCI Approach Policy For Accelerated Child Survival and Development in Malawi*. Lilongwe, Malawi.

Malawi Community Health Supply Chain Baseline Assessment Report

facilitating the delivery of much-needed health products to the community level so as to support and facilitate HSAs' work.

In recognition of this gap, the MOH and the SC4CCM project decided to explore opportunities to invest in identification of supply chain innovative interventions and best practices that specifically aim at significantly improving product availability at the community level to best support acceleration and realization of CCM program goals. This will be achieved through identifying, testing, and determining what interventions have the highest potential to significantly improve supply chain system performance at this level through a pilot project.

The SC4CCM project is the vehicle through which JSI and MOH will test various intervention options to identify and recommend for scale up—based on demonstrated evidence—interventions that best overcome supply chain constraints at community level in a manner that significantly improves product availability and use at that level.

Purpose and Objectives of the Assessment

The purpose of the baseline assessment was to collect quantitative and qualitative data on the status of the supply chain system for CCM and other selected health products, so as to:

1. Develop a better understanding of the existing supply chain for CCM and other select health products, including the strengths in the system as well as the areas that require improvement;
2. Identify drivers of supply chain performance to inform the design of an intervention strategy that will potentially improve product availability at the HSA level significantly; and
3. Provide baseline data to measure the impact of supply chain interventions later in the life of the project.

The SC4CCM project is built around testing innovative supply chain solutions and moving evidence into practice. Hence, the baseline data will provide a verifiable platform against which impact of supply chain interventions in improving product availability at the community level can be objectively assessed and measured.

Theory of Change as basis for SC4CCM project

The SC4CCM project has developed its own Theory of Change (TOC) to serve as a technical framework for the project and guide the process of improving supply chain performance at the community level. The TOC identifies the long-term goal being sought (or main problem that must be addressed) and its relationship to those preconditions that are necessary and that must exist in order to achieve the goal or solve the problem. The TOC lays out the pathways for making progress for each precondition.

Within the context of the project, the country level goal that must be achieved is the availability of CCM products at the community level when, and in the quantities, needed in order to enable HSAs to treat the basic treatable conditions presented at their clinics. The goal level hypothesis of the project is that if effective and efficient supply chain systems can be created to ensure that community health workers have consistent access to sufficient quantities of high-quality, affordable essential medicines, they will be able to dramatically improve care and treatment for children. This will ultimately contribute, along with other CCM interventions outside of SC4CCM, to the overall goal of reducing childhood mortality for children under five from treatable diseases.

Achieving sufficient supplies of essential CCM products at the community level requires all of the following preconditions to be met:

- Necessary, usable, quality CCM products must be available at HSA resupply point(s)
- HSAs, or the persons responsible for CCM resupply, need to know how, where, what, when and how much of each product to resupply and act as needed
- Goods must be routinely transported between resupply points and HSAs
- HSAs must have adequate storage: correct conditions, security and adequate space

- HSAs must be motivated to perform their roles in the CCM supply chain

Designing and testing practical interventions that overcome obstacles to the above preconditions and significantly improve CCM product availability at community level at scale in low-resource settings is the focus of this project.

These preconditions are also dependent on the status and condition of other lower level preconditions that must in the first stage be met if the upper level preconditions are to be achieved. The key implication from this recognition of multi-tier preconditions is that in order to effect meaningful change by improving product availability, the basic building blocks of the system will need to function as expected. Hence, the change must address the foundation of the system. The significance of the TOC model is that it forces stakeholders to critically think through those factors that will impact the program and therefore anticipate data sources that will need to be monitored in order to facilitate assessment of progress and achievements over time towards the desired goal.

The ability to achieve the desired long term project goal and impact directly depends on the existence of necessary pre-conditions at the different levels they exist.

Appendix B presents a diagrammatic illustration of the Theory of Change Model that underlies the SC4CCM project.

Methodology

In order to collect adequate data to better understand the current logistics system, a combination of tools were used. These included 1) the Logistics System Assessment Tool; 2) the Logistics Indicator assessment Tool; and 3) the Key Informant Interviews.

The first two tools were developed and used extensively by JSI under its previous logistics management projects and validated in many countries. These tools were modified to meet the specific data requirements under the SC4CCM project, and were used to do extensive analyses of current supply chain conditions.

Logistics System Assessment Tool (LSAT)

The LSAT was a two-day group discussion that sought key stakeholder perspectives on a comprehensive range of aspects of the current national logistics system for CCM products. The LSAT contained questions that could be scored and tracked over time to measure progress once interventions commence. The LSAT was modified to address the information needs of the community level supply chain and for Malawi's unique situation, so that the data obtained was relevant enough to guide decision making.

Logistics Indicators Assessment Tool (LIAT)

The LIAT is the main quantitative tool that was used to collect stock status and other quantifiable data of the supply chain from the facility level. SC4CCM modified this tool to capture community level supply chain data in addition to data from other levels, within the Malawi context.

LIAT data measured core indicators identified in the TOC and were collected through structured interviews with HSAs and with health facility and/or warehouse staff at other levels of the system. Methods also included physically counting quantities of key CCM products kept at each level, assessing storage conditions and reviewing other aspects of record keeping and reporting about selected health products.

Key Informant Interviews (KII)

This constituted interviews with some experts who have knowledge of the CCM supply chain system, in order to augment the LSAT. This included structured interviews with different departments in the MOH, CCM partners, CHAI, CHAM, Valid Nutrition, Project Peanut Butter, as well as interviews with DHOs to get their perspectives on challenges they face with CCM supply chain issues and related risks to program success, if any. The full list of contacts is included in Appendix A.

LIAT Survey Design

Sample Selection

In this baseline assessment, a standard cross-sectional design was used. A three stage process was used to select respondents to the survey, as explained below.

1) In the first stage, 10 out of Malawi's 28 districts were purposefully selected in order to ensure relatively balanced geographical coverage across the 3 main regions – North, Central, and South. The following criteria was taken into consideration when selecting the districts: a) potential for JSI to

work in the district during post baseline phase, b) presence of a range of CCM partners and on-going current interventions, c) number of hard to reach areas and availability of CCM trained HSAs, and d) geographical location of the district.

2) *In the second stage*, HCs in the above selected districts were selected using probability proportional to size (PPS), the primary unit of analysis being the number of hard to reach areas. This sampling procedure involved listing all the health centres and their corresponding number of hard-to-reach village clinics in the ten districts using updated lists from IMCI department and DHO offices. In sampling the health centres, we first calculated the cumulative population, then determined sampling interval by dividing the total population of the entire hard-to-reach village clinics by 80 (the total number of health centres required). Then a random number was chosen to identify the starting point on the list to begin selecting hard-to-reach village clinics. After selecting the first hard-to-reach village clinic using the random number, the second hard-to-reach village clinic was identified by adding the sampling interval to the random number selected until all the 80 hard to reach village clinics were selected.

3) *In the third stage*, three HSAs were randomly selected from each participating health centre and invited to take part in the assessment. Priority was given to IMCI CCM trained HSAs and those managing drug boxes.

Guidelines for selection of HSAs at health centres:

1. Where there were more than three functional village clinics – randomly sampled three from among the functional village clinics;
2. Where there were exactly three functional village clinics - selected all three functional village clinics available;
3. Where there were two functional village clinics - selected those two village clinics, then selected one HSA randomly from among the HSAs not managing village clinics;
4. Where there was only one functional village clinic - selected that one village clinic, then select two HSAs randomly from among the HSAs not managing village clinics
5. Where there were no functional village clinics – selected three HSAs randomly from among the HSAs not managing village clinics

Table 1: Sample Size

System Level	Target	Achieved
Regional medical stores	3	3
District health office and pharmacy (2 in North, 4 in Central, and 4 in South)	10	10
Health Centres (~8 health centres per district)	80	80
HSAs (three HSAs per health centre)	240	248

Use of smartphones for data collection

Given that the project’s goal with the baseline assessment was to rapidly turn around results to be used for input in developing and designing interventions, a decision was made to use smart phones for baseline data collection. The project used EpiSurveyor mobile by DataDyne, which is a free software package that facilitates transfer of interview forms onto smartphones for data collection and enables transmission of the data from phones directly to the internet via the web. Nokia e71 mobile phones were used. Prior to implementing the survey, the project used a web-based program called EpiSurveyor to train data collectors for seven days in form navigation and on basic logistics competencies needed to collect credible data. The forms and the use of the phone were also field tested for 1.5 days, and minor bottlenecks observed were accordingly rectified prior to commencement of actual data collection.

Following validation of pre-set LIAT forms by SC4CCM, MOH, and MAC, forms were loaded onto smartphones. The smartphone forms were developed using EpiSurveyor. Such arrangement allowed immediate transmission of the data collected to a web-based server, which bypassed the need to manually enter data into a separate database and allowed preliminary review of data collected in real time to aid troubleshooting throughout the data collection period.

Enumerator Training

The training of enumerators was preceded by a three-day meeting of JSI and MAC supervisors to familiarize each supervisor with the survey methodology, questionnaires and use of smartphones for data collection. A detailed enumerator training schedule was also worked out during this meeting.

Pharmacy technicians and nurse enumerators were then invited for a seven-day intensive training. The training started by introducing the participants to the SC4CCM projects, the supply chain systems in the country including key levels and standard data monitoring forms. Thereafter, participants were taught about survey methodology, interview techniques, random selection of HSAs and use of smartphones for data collection. The training had a two-day pilot phase where both the questionnaires and the use of smartphones for data collection and transmission to a central server were field tested. The questionnaires were then appropriately modified post pilot test to incorporate all necessary changes. Both JSI and MAC personnel facilitated the training of enumerators.

Fieldwork/data collection

Five teams made of two enumerators each visited each of the districts. The teams were supervised and supported by two full time supervisors who moved back and forth between the five teams throughout data

collection to provide oversight and assistance. For the pilot and first week in the field, SC4CCM project staff also travelled with enumerator teams to observe data collection to help resolve technical issues.

A code was assigned to each Regional Medical Store (RMS), district, HC and HSA on the sampling log provided. These codes were used to complete the LIAT forms as appropriate. The sampling log books were used to document progress and to take notes on issues encountered during data collection. The log books were submitted to MAC and JSI staff to help them understand the field work that took place. All information collected was entered into smartphones and electronically sent to a central server. Approximately five days were required per district for two teams to complete data collection.

Data collection commenced on the 5th of May 2010 and was completed on the 4th of June 2010.

Independence of JSI from data collection: To support the independence of this evaluation, and increase efficiency and credibility in the quality of data collected, JSI contracted the MAC in the College of Medicine to undertake the data collection work as an evaluation partner. MAC's role included planning the field data collection and related logistics, managing enumerator contracting and payments, overseeing the LIAT fieldwork, and supporting record inventorying and data cleaning to facilitate analysis.

Data Management and Analysis

Data collectors sent electronic survey records directly from smartphones to the web-based EpiSurveyor database, and SC4CCM USA-based M&E staff received and processed them. In collaboration with MAC, the M&E staff inventoried and cleaned records throughout the data collection period and after completion of data collection, until all expected records were received (within a 5% expected margin of loss if sampled persons could not be reached after two visits). Some problems encountered during this process included receipt of duplicate records and failure to send some records over the network due to either poor connectivity or occasional malfunction by two of the phones used. These records had to be downloaded manually from phone to computer and sent as email attachments to SC4CCM USA-based M&E staff. JSI and MAC worked closely together to find solutions for these technical glitches.

The format of records received allowed for easy transferring of data to Excel. However, additional steps were required to format records for analysis in other packages such as SPSS and Stata. Analysis of this quantitative data was conducted by JSI-Washington staff using all three programs: Excel, Stata and SPSS.

Results Dissemination

Results were presented in tables, graphs and charts. A number of PowerPoint slide presentations were made according to key themes or categories. After JSI staff processed the data and carried out the initial stages of analysis, in-country stakeholders (including MAC, Malawi-MOH, DHOs and CCM partners) were invited to review and add their interpretation of the results through a series of data validation workshops held in Malawi in August 2010. A secondary analysis will be done in the future and the results shared with partners in Malawi.

Summary of Findings

This baseline assessment was designed to assess each of the five main preconditions of the Theory of Change (TOC). By doing so, the project will better understand the extent to which preconditions are in place and what gaps exist that must be addressed in order to achieve the country level goal of ensuring HSAs have sufficient quantities of quality CCM products to treat common childhood conditions at community level when needed.

Describing the Sample

In viewing the findings it is important to understand the profile of the sample that was surveyed. This section offers a description of the skills and capacity of the HSAs in the sample and their profile in terms of the types of products managed if they manage any products at all.

Traditionally, HSAs in Malawi did not manage health products. Instead, they were only responsible for environmental health issues such as health education, diseases surveillance and sanitation assessments. In recent years, the role of the HSA is being expanded to include community case management, HIV testing and family planning roles. This expanded role has not yet been fully implemented to all HSAs, and as a result we see a variety of skills and capacity within the HSA cadre in Malawi. Table 2 describes the HSAs skills and capacity within the sample of this assessment:

Table 2: Skills and Capacity

Parameter	HSAs (n=248)
HSAs trained in IMCI	65%
HSAs managing health products	56%
HSAs who are both IMCI trained and managing any health products	54%
HSAs with drug box	56%
HSAs trained in supply chain functions	59%
Resupply point personnel trained in SC	75%

Beyond the above parameters it is worth noting that **29 of the HSAs** surveyed had been trained in IMCI but did not manage any health products at the time of the survey. It is also important to recognize that 56% of HSAs who manage health products are not the same 56% HSAs who had a drug box. Table 3 shows that 11 HSAs manage health products but did not have a drug box and 10 HSAs do not manage any health products but do have a drug box.

Table 3: HSAs who had a drug box vs. HSAs who manage health products

Have Drug Box?	Manage Products?		
	Yes	No	Total
Yes	128	10	138 (56%)
No	11	99	110 (44%)
Total	139 (56%)	109 (44%)	248

Malawi Community Health Supply Chain Baseline Assessment Report

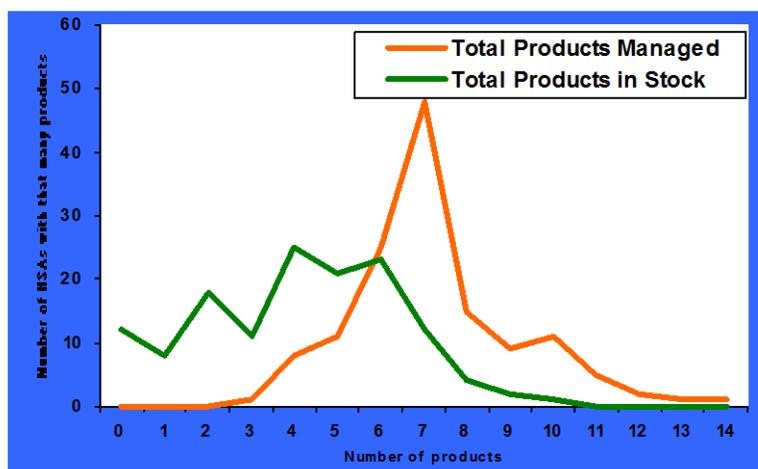
It was only possible to measure supply chain performance among those HSAs that manage health products, so as a result most of the findings will be presented using a denominator of 139 HSAs who manage health products. The assessment preferentially sampled HSAs conducting village health clinics for sick children, and as a result there was a larger proportion of HSAs managing child health products compared to HIV tests or family planning products. In addition, the CCM program was still being rolled out in some districts and in some districts the number of HSAs managing health products was very small; however, as the project is interested in working in both districts that are just rolling out CCM as well as districts with more mature CCM programs, it was decided that these districts should be included. Table 4 outlines the number of HSAs who managed each of the 15 products:

Table 4: Number of HSAs who reported managing individual products

Product	Number of HSAs managing
Cotrimoxazole 480 mg tablets	130
LA 1 x 6 tablets (ACT or lumefantrine 120mg/artemether 20mg, 30 x 6)	116
LA 2 x 6 tablets (ACT or lumefantrine 120mg/artemether 20mg, 30 x12)	111
paracetamol 500 mg tablets	132
ORS sachets (Oral Rehydration Salts)	126
Tetracycline 1% Eye ointment tubes	109

Most HSAs currently manage a much smaller amount of products than the intended scope for HSAs, which is between 15 and 19 products (15 of which are mentioned in the Table 4).

Figure 1: Number of Products HSAs Manage vs. Number of Products in Stock on the Day of Visit



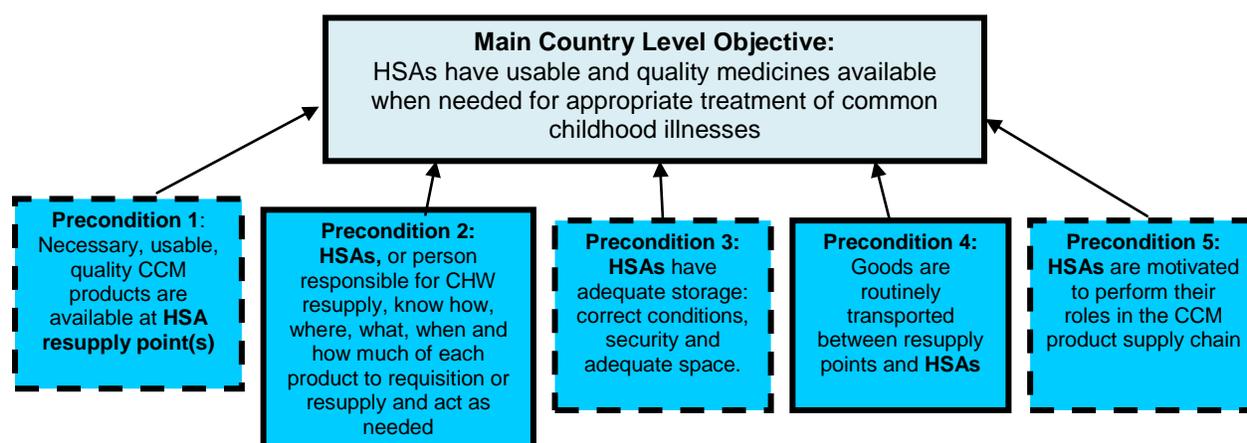
The graph here depicts that the average number of products managed by HSAs sampled is seven (not necessarily the same products). Nevertheless, very few HSAs actually had seven products in stock on the day of visit. Only 12 HSAs had seven products in stock on the day of visit, and 21 HSAs had five products in stock. The green line (“Total Products in Stock”) drops significantly after six products. It is important to keep this in mind when reviewing the data, especially in terms of the supply chain

performance as it can be expected that an increased number of products will also increase pressure on the supply chain.

Findings by Goal and Precondition

The following findings are presented in relation to the main goal objective that HSAs have usable and quality medicines when they need them, as well as the five main preconditions that are theorized as essential to achieving this objective. It should be noted that there are a number of corollary preconditions connected to each main precondition that are considered pathways to achievement, as per the TOC in Appendix B (a description of the TOC framework is also included to explain relationships in the diagram). This report presents only preliminary qualitative and quantitative data, a secondary analysis will be done in the future and the results shared with partners in Malawi.

Figure 2: The Main Country Level Objective and Five Main Preconditions



Main Goal Objective: HSAs have usable and quality medicines available when needed for appropriate treatment of common childhood illnesses

This assessment considered stock status of all health products managed by the HSAs in terms of product availability at the community level. However, in line with the main goal objective, the analysis focused on essential products for treating common childhood illnesses (pneumonia, diarrhoea and malaria); such as cotrimoxazole 480mg tablets, oral rehydration solution (ORS) sachets and lumefantrine/artemether (LA) 1x6 and/or 2x6, respectively.

This survey found that only 35% of HSAs had all three key products in stock on the day of visit that are needed to treat pneumonia, diarrhoea, and malaria. The three key products are cotrimoxazole, ORS and any type of LA (only one strength of ACT had to be available). The four tracer drugs, which included both strengths of LA, were in stock at 22% of HSAs who manage all four.

Only about 1/3 of HSAs had the health products needed to treat all 3 common childhood illnesses (pneumonia, diarrhea, and malaria) meant to be treated under the current CCM program on the day of visit.

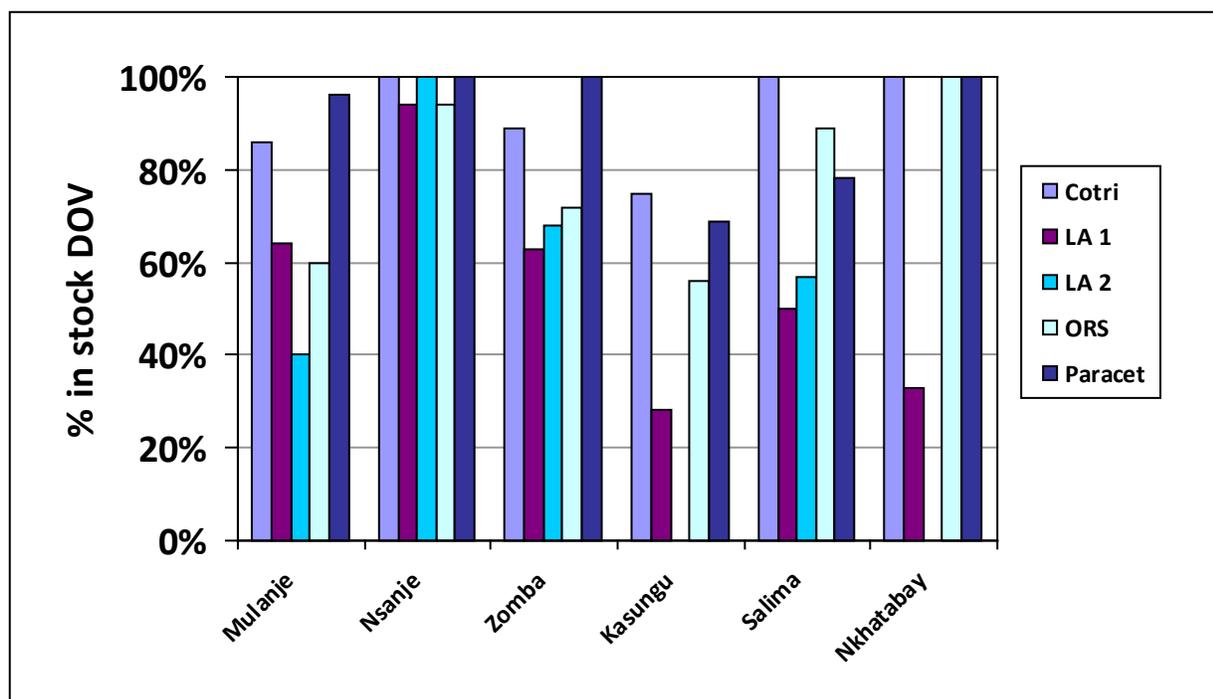
Table 5 contains the percentage of HSAs that had the individual child health products (including paracetamol) available on the day of visit. Availability of cotrimoxazole and paracetamol was high on the day of the survey, with moderate availability of ORS sachets and low availability of LA.

Table 5: Stock levels of main child health products at HSA level

Product	HSA Stock Availability on Day of Visit	
Cotrimoxazole 480 mg tablets	88%	(n=130)
LA 1 x 6 tablets	55%	(n=116)
LA 2 x 6 tablets	44%	(n=111)
Paracetamol 500 mg tablets	84%	(n=132)
ORS sachets (Oral Rehydration Salts)	66%	(n=126)

Looking at CCM product availability by district, there is reasonable variability across product and across districts (Figure 3). Most HSAs, except for those in Kasungu, had cotrimoxazole and paracetamol available on the day of visit; and, except for those in Kasungu and Mulanje, most had ORS sachets. Product availability among HSAs in Nsanje for all five child health products was above 90% on the day of visit, whereas in Kasungu product availability was below 80% for all products.

Figure 3: Product availability among HSAs who manage the product on the day of visit, by selected districts

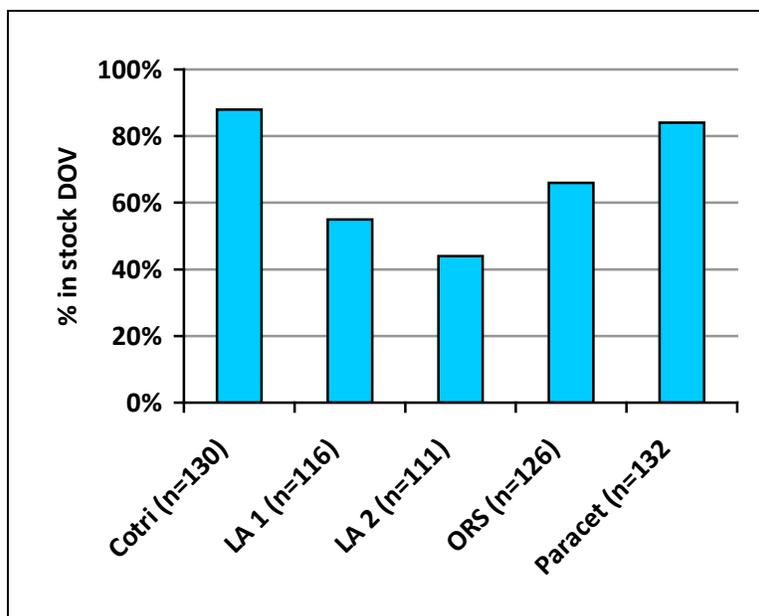


It is important to note that HSAs in Nkhatabay were not permitted to manage LA by the District Health Management Team (DHMT) at the time of survey, which explains the low availability of this product in the district; however, 100% of HSAs in Nkhatabay had cotrimoxazole, ORS and paracetamol in stock on the day of visit.

Figure 4 highlights the variations in product availability at the HSA level by individual products. It is important to point out that the sample size of HSAs changes per product as the percentages are calculated by considering the number of HSAs who reported managing each individual product; the varying sample

size is noted beside the product’s name. Availability varied widely across products in the same system on the day of the visit.

Figure 4: Percentage of HSAs who manage individual health products that had the product in stock on the day of visit



Product availability at the HSA level in Malawi varied by product and by district. To improve availability, there are potential lessons that can be learned from high performing districts and applied to other districts. As data pertaining to the preconditions of product availability are considered in the next sections, some district level data will be presented to supplement. In addition, the secondary analysis of this data will further explore district level variances.

Precondition 1: Necessary, usable, quality CCM products are available at HSA resupply point(s)

It is expected that for products to be available at the lowest level of the supply chain, products must also be available at the higher levels of the supply chain. During the period of the assessment low availability of key CCM tracer products necessary to treat basic childhood conditions at the community level was an issue across the entire CCM product pipeline, from central to community level.

Of the 80 HSA resupply points assessed (“resupply points” includes both health centres and district hospitals) only 47% had all the three key CCM products³ needed to treat common childhood conditions at the community level.

To understand the status of the national pipeline, the following findings are notable:

1. Only 22% of 139 HSAs who manage drugs had all four key child health medicines and 35% had three key child health medicines in stock on the day of visit;
2. Only 50% of the 80 HSA resupply points assessed had all three key child health products in stock on the day of visit; and

³ Cotrimoxazole 480mg tablets, ORS sachets and lumefantrine/artemether (LA) 1x6 and/or 2x6 (only one strength of ACT had to be available)

Malawi Community Health Supply Chain Baseline Assessment Report

3. Of the three RMS visited, only one had all the three key CCM products in stock.

To investigate further the nature of the link between product availability at the resupply point and the HSA, the data on product availability was disaggregated by region, district and individual facility. Table 6 presents the product availability by region, product and service delivery points:

Table 6: Percentage of facilities and HSAs in stock of each key product on the day of the visit by region

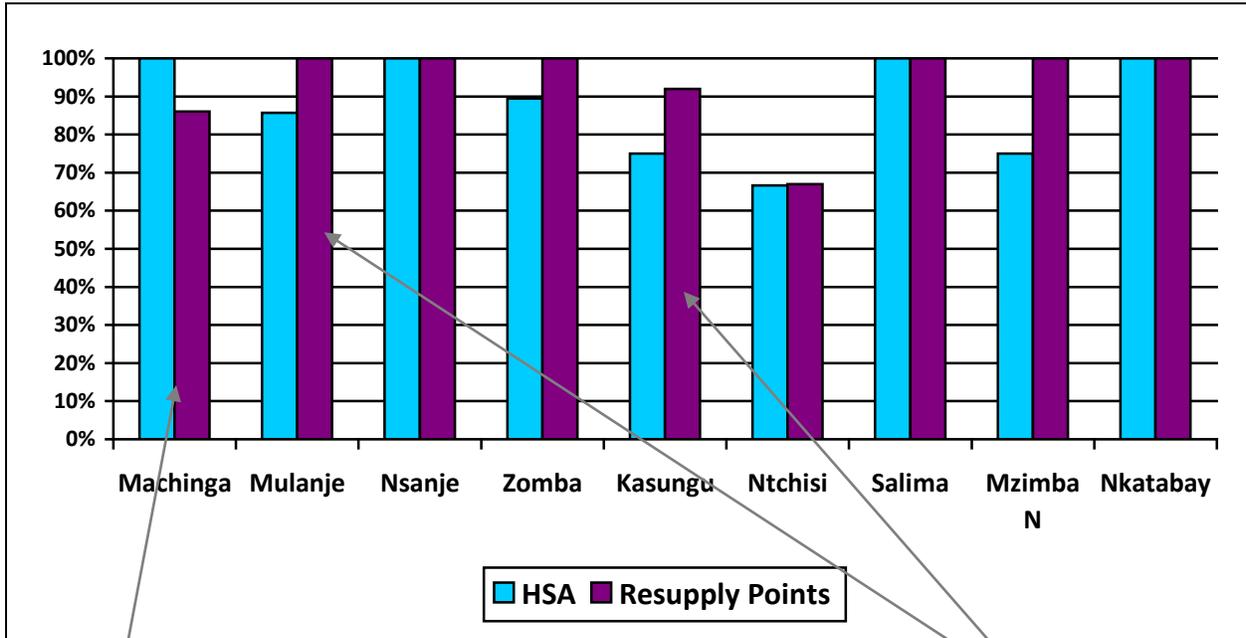
National Pipeline of Key CCM Products	1	2	3	Avg. % total
RMS in stock of Cotrimoxazole tablets	YES	YES	YES	100%
% HCs in stock of Cotrimoxazole tablets	96%	88%	100%	93%
% HSAs in stock of Cotrimoxazole tablets	91%	80%	93%	87%
RMS in stock of LA1x6 tablets	YES	YES	NO	66.7%
% HCs in stock of LA 1x6 tablets	81%	56%	70%	70%
% HSAs in stock of LA 1x6 tablets	72%	28%	63%	54%
RMS in stock of LA2x6 tablets	YES	YES	NO	66.7%
% HCs in stock of LA 2x6 tablets	55%	19%	80%	44%
% HSAs in stock of LA 2x6 tablets	66%	13%	38%	43%
RMS in stock of ORS sachets	NO	YES	YES	66.7%
% HCs in stock of ORS sachets	54%	93%	90%	74%
% HSAs in stock of ORS sachets	59%	63%	93%	64%

Key: 100-80% in stock rate, 79-51% in stock rate, 50% or less in stock rate

At the time of the survey, cotrimoxazole had high availability throughout the system as did ORS in two regions; however in one region where ORS was not available at the RMSs, there were also shortages at the lower level facilities that are resupplied by this warehouse. In considering the situation with LA 1x6 in the Northern Region, there was no product available at the RMS but there was some availability at the service delivery points (health centres and HSAs). This may be the result of a national shortage of LA that has affected the regional warehouse but had not yet trickled down to the lower levels.

The following graphs present the product availability at resupply points vs. HSAs in each district. This data brings us closer to the actual relationship between the HSA and their direct resupply point. Only two of the key products are present here, cotrimoxazole and LA 1x6, which highlights a great difference in product availability between the resupply point and the HSA at times, i.e. a far greater percentage of resupply points may have the product in stock compared with the HSAs and vice versa. Product availability is actually sometimes higher at the HSA level than at the resupply point.

Figure 5: Percentage of HSAs and resupply points with cotrimoxazole 480mg tablets in stock on day of visit



In Machinga more HSAs have cotrimoxazole in stock than the resupply points.

However, availability at the resupply points was far higher than at the HSAs in Kasungu, Mulanje and others.

Figure 6: Percentage of HSAs and resupply points with LA 1x6 tablets in stock on day of visit

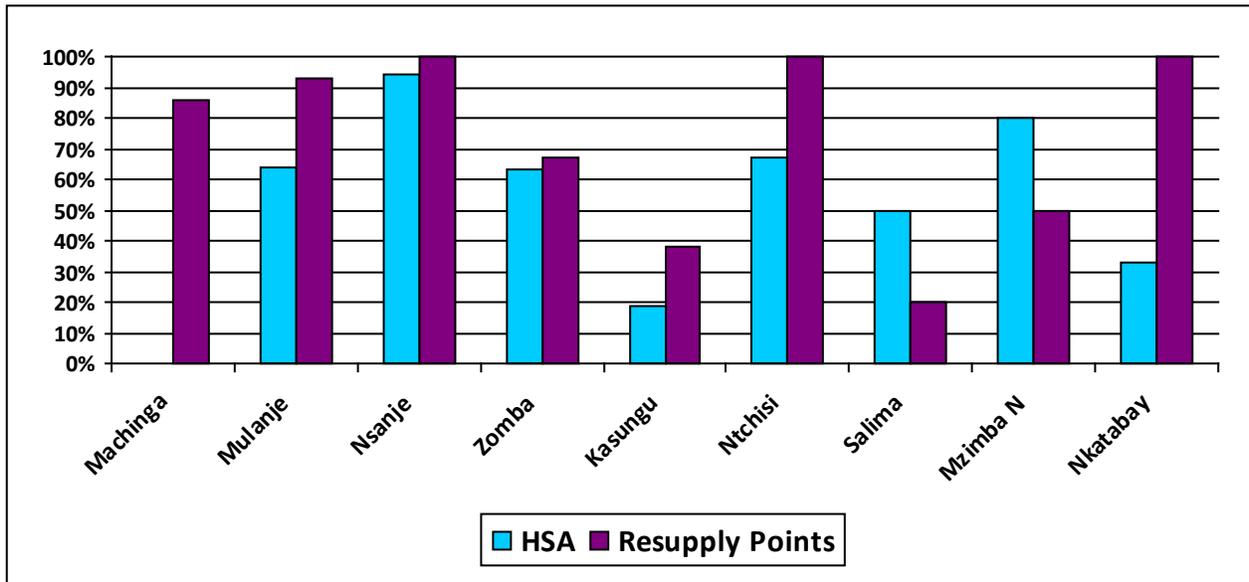
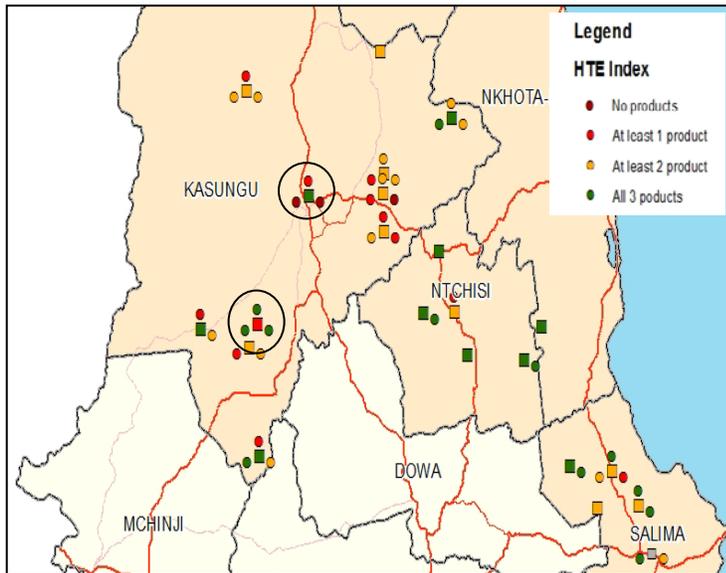


Figure 7: Product Availability of Three Key CCM Products at health centres and HSAs in Kasungu, Ntchisi and Salima



To further explore the hypothesis that product availability at the resupply point predicts availability at HSA level, the in-stock rates were mapped using GIS positioning to view product availability by individual facilities and HSAs. The map in Figure 7 is a small portion of the full map that can be found in Appendix C. The squares in the map represent resupply points and the circles represent HSAs associated with that resupply point. From this map, one can see the hypothesis mentioned above does not always hold. There are some instances where some HSAs have all three key products in stock but the resupply point is missing one or two of those products, and other situations where product availability is far better at the resupply point than the HSA.

LSAT Results (Precondition 1)

(Directly quoted from LSAT documentation)

Findings

- Products being assessed are not maintained in full supply - there is short supply at central level and inadequate funding at district levels
- Delays in procurement due to lack of capacity/bureaucracy, poor quantification, logistical constraints and poor planning
- LMIS reports at the central level do not provide information on stock status at the HSA level
- The issue of getting products to the districts was mentioned by all stakeholders. The biggest issue is the budget, and then delays in ordering, which is particularly an issue for family planning products that are not prioritized.

Recommendations

- Need to build capacity for product selection at regional level to provide input into product selection
- Activate National Medicines & Supply Committee
- Improve human resource capacity for quantification
- Improve communications to districts, facilities, e.g. IT, mobile phones

Implication and significance

The above findings, when examined in relation to each other, highlight a central problem of general product availability throughout the entire CCM product pipeline. Product availability in the national pipeline does impact the overall status of product availability throughout the system and must be

addressed if there is to be adequate medicines to treat common diseases of childhood. It should, however, be recognized that product availability at the resupply point is not the only driving factor for product availability at lower levels and supply chain performance.

Precondition 2: HSAs, or persons responsible for HSA resupply, know how, where, what, when and how much of each product to requisition or resupply and act as needed

Precondition 2 recognizes the importance of knowledge and capacity of health workers for the system to function efficiently. HSAs, as well as health workers at resupply points, need to understand the procedures for supplying health products to the HSA and that all staff must have the tools and capacity to fulfil their role in achieving the system goals. To assess the strength of this precondition, the survey asked respondents throughout the supply chain about the types of training they received, the availability of standard operating procedures and reporting forms and any general procedures they followed concerning stock management and reporting of logistics data.

In general, the findings indicated that a fairly high percentage of respondents who managed products had been trained in record-keeping, ordering, and reporting and were given the tools to request the needed product quantities from their resupply point. However, available evidence does not prove this translates into high performance in terms of supply chain management practices and product availability.

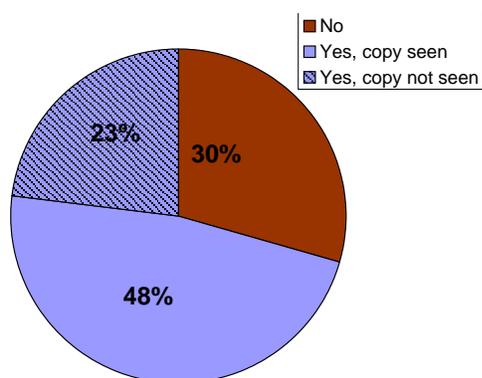
Reported training rates in Malawi at both the HSA level and at resupply points was very high. Around 85% of HSAs who manage health products reported being trained in the various supply chain practices compared to only 10% of those HSAs not managing health products reported. In addition, around 80% of resupply point staff reported to have been trained in record keeping, reporting, ordering and FEFO (first to expire, first out).

Table 7: Percentage of HSAs who manage health products that reported being trained in the following supply chain tasks

Supply Chain Areas	HSAs who manage health products (N=139)	HSAs who don't manage health products (N=109)
Record keeping, ordering, reporting (combined as a %)	90%	12%
Receiving, storage and FEFO (combined as a %)	91%	13%
Transportation	88%	10%

Availability of Standard Operating Procedures (SOPs) manual

Figure 8: Availability of SOPs on the Day of Visit

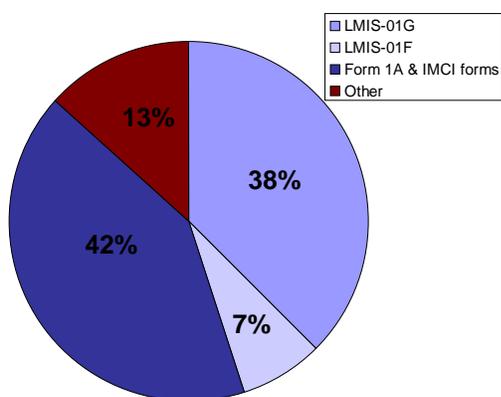


Of the 139 HSAs who manage health products only 48% confirmed having the SOP and were able to produce a copy for the data collector to observe. Approximately 23% of HSAs claimed they had seen a copy but could not produce one, while 30% indicated they did not have one (see Figure 8).

Use of standardized logistics reporting form

There were variations in the types of forms reported being used by HSAs to report logistics data. Only 38% reported using the most current and “correct” version of the LMIS-01G, while the remainder used different versions/types of reporting forms. Figure 9 shows the percentage of HSAs by the type of form they reported to be using.

Figure 9: Types of Reporting Forms used by HSAs



The baseline was conducted during the period when MOH was in the process of introducing a revised Community Clinic Drug and Medical Supplies Requisition Form (called LMIS-01G) to replace the previously used form (called LMIS-01F). While introducing community case management, the IMCI Unit developed another Form 1A, which also collects service and logistics data. Consequently it is expected that various forms are still used in the system while the new standard operating procedures with the LMIS-01G form is rolling out to all HSAs.

Data Visibility

As described above, while all HSAs do not use the same form for reporting logistics data, a large majority do, in fact, use some kind of form for this purpose. The next step is to ensure the people who need this information to make critical supply chain decisions receive the information in a timely way. 83% of HSAs who manage health products reported submitting logistics reports to the health centre and 16% reported submitting it to the district. 80% of HSAs reported submitting a report within the last month and another 10% reported submitting a report within the last two months.

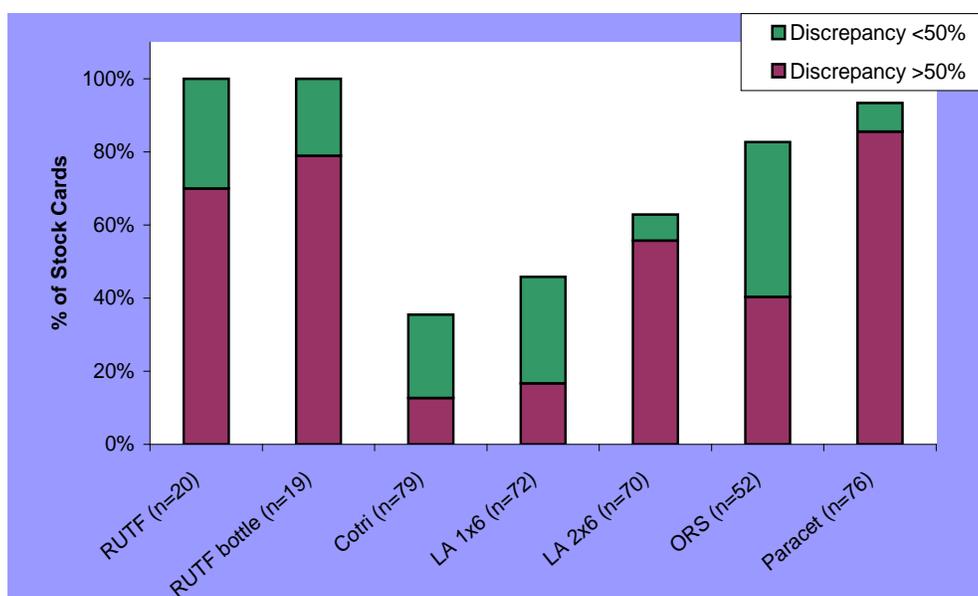
According to the standard operating procedures, resupply points are expected to use logistics information received from HSAs to determine the required quantity for the HSA. However the district and central level also need access to logistics data for the purposes of accountability, forecasting, monitoring the national pipeline and advocating for increased funding. Table 8 outlines how HSA data is reported to the higher level. It should be noted that 43% of health centers that include HSA data on their facility report did not specify if they aggregate the data with their own logistics data or report the information separately, another 43% did not report the data at all and only 14% claimed to definitely report the data separately to the higher level. ***Therefore it is not evident that data from the HSA level is visible at all levels of the system, nor is it necessarily used consistently for decision making when it is visible.***

Table 8: How Health Centres report HSA logistics data is reported to the higher level

	% HCs
HSA data on health products is included in facility report	43%
HSA data on health products is reported separately	15%
HSA data not reported to higher level	42%

It is also important to consider the skills and capacity of those working at the health centre level that are responsible for calculating resupply quantities and reporting logistics data to the higher levels. The stock card at the health centre is used for reporting logistics data (issues and possibly stock on hand) to the higher levels. Figure 10 shows that there were large discrepancies between the actual physical count and the recorded stock balance on stock cards, which indicates these critical sources of information are not being kept up to date.

Figure 10: Percentage from Health Centres and District Pharmacies with Discrepancy between Physical Count & Stock Card Balance



LSAT Results (Precondition 2)

(Directly quoted from LSAT documentation)

Findings

- There are procedures/guidelines that cover ordering, reporting and inventory control for all levels of the system
- Some staff have been trained in supply chain management depending on when trained in certain program activities

Recommendations

- Train all supervisory staff in logistics
- LMIS trainings should be well coordinated.
- Lobby for logistics to be part of curriculum for training health workers (currently planned, but unfunded)
- Staff development of all staff involved in logistics

Implication and significance

Current efforts are working to address the lack of standardized procedures and reporting forms in the system. However, the inability of the existing logistics information system to integrate all system segments so that consumption data from resupply points and community level can be adequately and correctly captured and communicated to the central level significantly compromises data visibility and the quality of data. The absence of data visibility results in poor accountability, poor forecasting, inability to monitor the national pipeline and limited ability to advocate for increased funding as needed.

Precondition 3: HSAs have adequate storage: correct conditions, security and adequate space

Storage is considered a precondition for the main objective to ensuring that the medicines maintain their quality and effectiveness so as to be useful in treating sick children when needed.

The storage conditions assessed in this survey through observation were as follows:

1. First to expire, first out (FEFO);
2. Damaged and/or expired health products stored separately to usable health products;
3. Stored separately from insecticides and chemicals;
4. Free of rodents or insects in the storage area;
5. Secured with a lock and key, and limited access;
6. Storage area is accessible during normal working hours;
7. Health products are protected from direct sunlight; and
8. Health products are stored at the appropriate temperature.

Generally storage conditions presented a minor concern at the HSA level. Storage conditions were generally good at the higher levels as well. The table below shows the percentage of HSAs who met each storage condition individually. (Note that at HSA level 3 storage conditions could not be assessed as there were too few products to observe - the use of FEFO and too few damaged or expired health products to observe them being stored separately). Among HSAs, 97% had a storage box that was less than 75% full, showing that space in the storage box seems adequate for the current amount of stock. Of concern are the number of HSAs who were not securing their drug box using a lock and key and the number of HSAs who had ants or insects in their drug box.

Table 9: Percentage of HSAs who manage health products who met the following storage conditions (six storage conditions assessed for HSAs)

	% of HSAs who met the condition
Storage box appears to be 0 – 75% full	97%
Storage area free of rodents or insects	83%
Storage area secured with a lock and key, access limited	71%
Medicines are protected from direct sunlight	96%
Medicines are stored at appropriate temperature	95%
Space is sufficient	90%

LSAT Results (Precondition 3)

(Directly quoted from LSAT documentation)

Findings

- HSA drug boxes too small
- Funding for warehousing and storage is not adequate

Recommendations

- Plan for storage capacity needs for HSAs in the future

Implication and significance

While storage is not currently a major concern for HSAs, there is evidence to suggest that storage does become a problem as the number of products increases. Of the HSAs surveyed in this assessment, the majority only managed between five and seven products, though in the future the mandate to manage a greater number of products may cause storage to become an issue.

Precondition 4: Transportation of products between HSAs and resupply points

Recognizing reliable transport as one critical aspect of an effective supply chain system, the assessment sought to understand the extent to which products are routinely moved from HSA resupply points to village clinics. As HSAs conducting village health clinics are in hard-to-reach areas it is expected that transporting health products to these remote locations will be a challenge. Therefore this survey gathered information on the conditions of the roads, the distances that must be travelled and the types of transport

Malawi Community Health Supply Chain Baseline Assessment Report

used to move products to the community to evaluate the appropriateness and reliability of the modes of transport.

56% of HSAs who manage health products reported traveling between one and three hours to the resupply point in the dry season, meaning an HSA must dedicate an average of one day per month to collect supplies (or more if the resupply point cannot fill the request on the first visit).

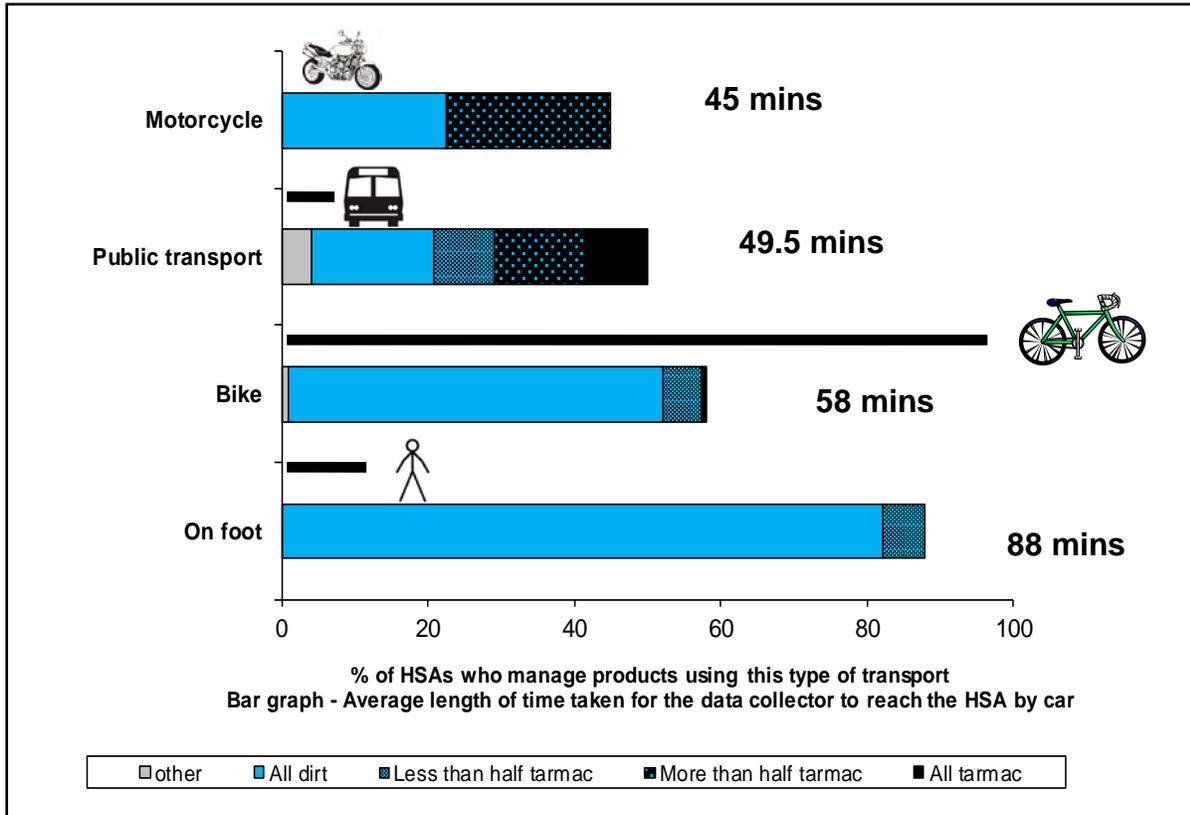
Table 10: HSA Travel Time to Resupply Point by Transport Type

Type Of Transport		< 1 hour	1 hr to <3 hrs	3 hrs to <5 hrs	5 hours or more	Total
Public Transport	Dry	25%	58%	17%	0%	100%
	Rainy	8%	67%	25%	0%	100%
Motorcycle	Dry	50%	50%	0%	0%	100%
	Rainy	0%	50%	50%	0%	100%
Bike	Dry	29%	58%	10%	3%	100%
	Rainy	10%	64%	18%	8%	100%
On Foot	Dry	7%	40%	33%	20%	100%
	Rainy	7%	21%	29%	43%	100%
Total	Dry	15%	32%	7%	2%	100%
	Rainy	6%	33%	12%	6%	100%

Figure 11 highlights the type of transport used and the distances and road conditions HSAs must travel according to each type of transport.

- The black line graph represents the percentage of HSAs who reported using each type of transport to travel to and from the resupply point to collect their supplies. Of 139 HSAs who manage health products 79% reported using bicycles, 11% go by foot, 9% use public transport and 1% use a motorbike.
- The length of each bar represents the comparable length of time it took for the data collectors to reach the HSA from the resupply point by car. Bars are grouped by the type of transport used by the HSA. On average, it took the data collectors 58 minutes by car to reach HSAs who reported using bicycles. It took 88 minutes by car to reach the HSAs who normally go by foot.
- The colour of the bar graph represents the road conditions between resupply point and HSA, and the road conditions are again grouped by the type of transport used by HSAs. The solid green section represents the proportion of HSAs who travel on roads that are all dirt; the green dots represent the proportion of HSAs who travel on part dirt and part tarmac roads; while the solid black section represents roads used that are all tarmac.

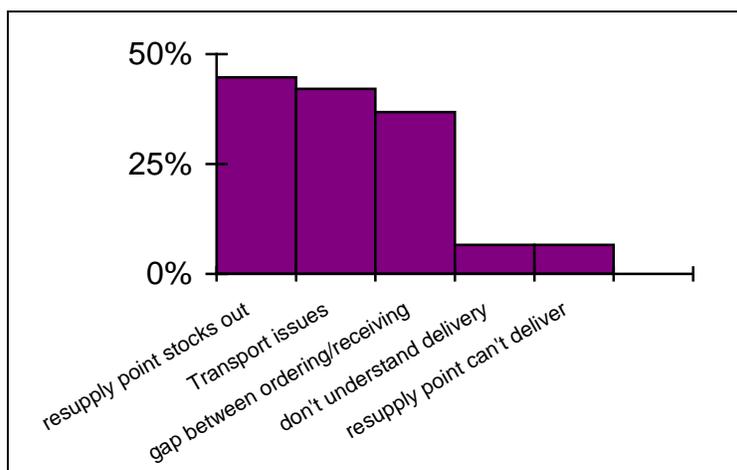
Figure 11: Percentage of HSAs that use each type of transport compared with the distances and road conditions between the HSA and their resupply point



Most HSAs travel by bicycle or foot, and in most cases the road conditions travelled by HSAs are fairly rough and bumpy. The average distance is about an hour by car from village health clinic to the resupply point. It can be seen that those who go by foot traverse a further distance, and the roads are overwhelmingly dirt, while the few HSAs who go by motorbike have the shortest distance to travel.

When asked about problems associated with collecting or receiving health products **79 of the 139 HSAs who manage health products reported having some kind of problem**. Respondents most commonly reported stock outs at the resupply point, followed by transportation.

Figure 12: Reported problems collecting/receiving products (multiple responses)
(n = 76 HSAs who reported problems)



The problems associated with transport include “it was too long to reach the resupply point,” “there was no transport available,” “the transport was always broken” and “difficulties carrying supplies.”

LSAT Results (Precondition 4)

(directly quoted from LSAT documentation)

Findings

- 100% of HSAs currently collect from their resupply point
- the main obstacle to transporting supplies to HSAs working in hard-to-reach areas is route - type of road
- There are insufficient spare parts at the HSA level.

Recommendations

- Provide motor bikes for health centres and bicycles for HSAs

Implication and Significance

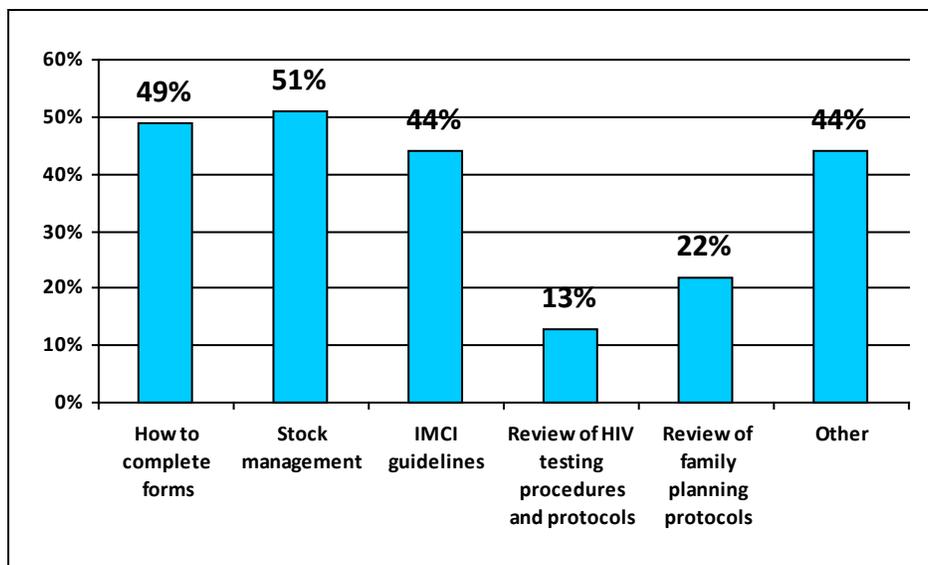
Transportation of health products presented as a key problem in this assessment, in the sense that nearly 90% of HSAs reported cycling or walking long distances over difficult terrain in order to access their supplies. Furthermore, the portfolio of products managed by the HSAs is expected to increase, from the current average of seven products to about 19 products, and at this time the current bicycle or foot-based transport arrangement may not work for HSAs any longer.

Pre-condition 5: HSAs are motivated to perform their roles in the CCM product supply chain

Motivation of a health worker to perform their roles in any system is a complex, multi-factorial issue and essential to a functioning system. Due to the complexity of this issue and the broad scope of the assessment only limited findings can be gleaned on this subject. The survey collected information on supervision and feedback as sources of motivation and asked respondents to rank their level of job satisfaction and provide some insight into what motivates them to do their job.

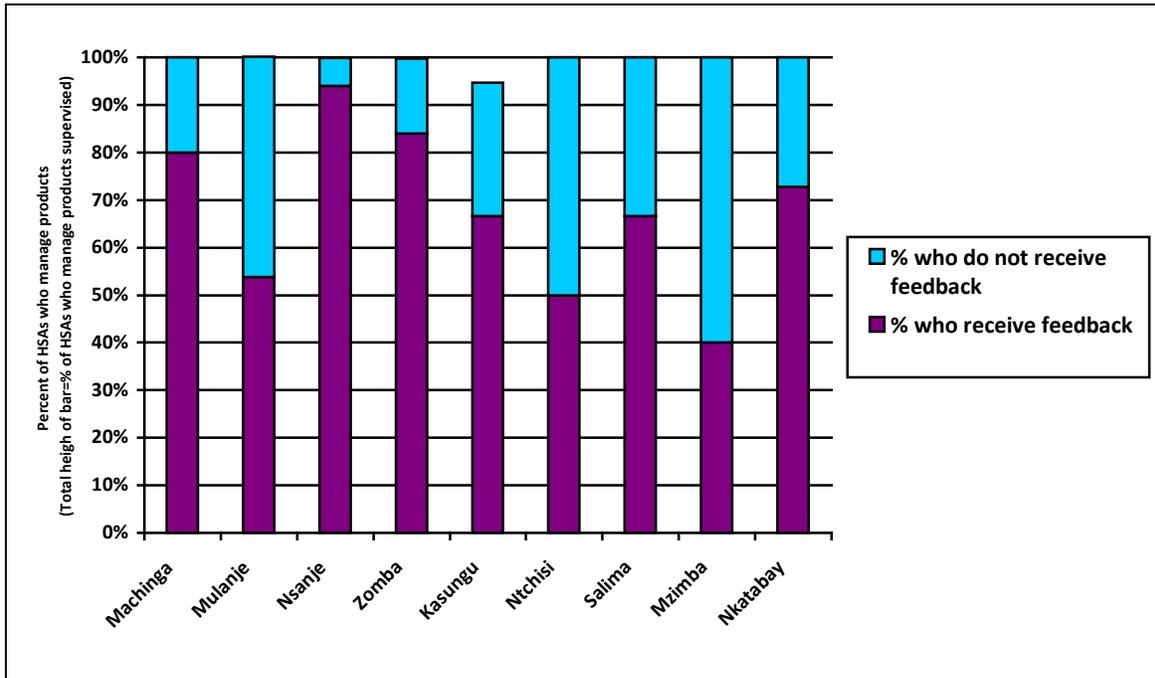
Reported levels of HSA supervision were very high. 84% of HSAs reported receiving a supervisory visit in last three months and 96% of supervisors reported providing supervision to HSAs at least every three months. Due to the nature of the survey it was not possible to assess the efficacy of the supervision, but the assessment did cover general content and in particular the inclusion of supply chain management (SCM) topics in supervision sessions. The graph below shows that 49% of HSA supervisors reported including how to complete forms in supervision and 51% reported including stock management in supervision.

Figure 13: Areas of Supervision reported by HSA Supervisors



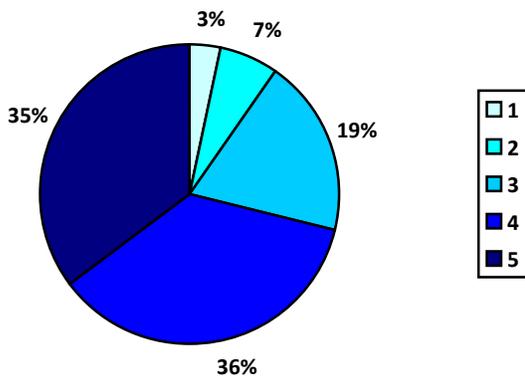
Respondents reported receiving feedback much less frequently compared to supervision. Only 59% of HSAs reported ever receiving general feedback. The following graph shows the percentage of HSAs who were supervised (total height of the bar), and the percentage of those who received feedback (level of purple inside the bar). Reported amount of feedback received varied significantly from district to district. The level of feedback did not always match the level of supervision, for example 98% of HSAs reported receiving supervision while nearly 70% reported never receiving feedback.

Figure 14: Supervision and Feedback on SCM of HSAs who manage products (n=139) by district



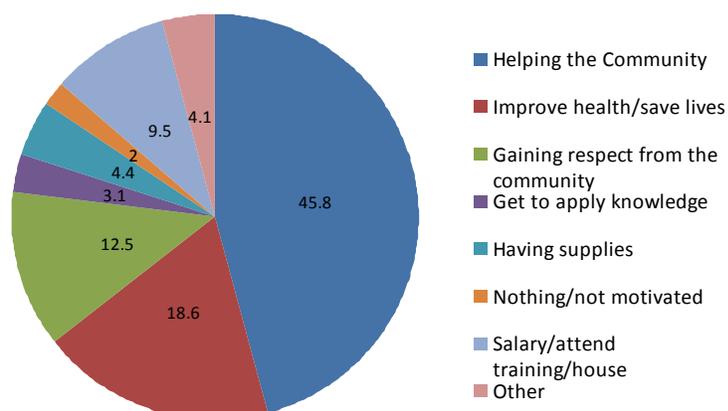
In terms of motivation and job satisfaction, HSAs were asked to rate their job satisfaction from 1-5, with 5 as the most satisfied and 1 as the least satisfied.

Figure 15: Self-Reported Job Satisfaction (1-5 with 5 being highest satisfaction)



A large proportion of HSAs reported very high job satisfaction, with 60% of HSAs ranking their job satisfaction at 4 and 5. *This result should be interpreted with caution since job satisfaction was reported to a data collector and not captured through a self-administered questionnaire. Therefore, it is feasible that job satisfaction rates are lower than the results of this assessment demonstrate.*

Figure 16: Reported Motivation Factors for HSAs



When HSAs were asked an open question about what motivates them a large majority states that helping the community and improving health was a high motivation. As the program is in an early stage this there is potential an opportunity to harness this enthusiasm by ensuring the HSAs have the health products they need to “help the community”.

LSAT Results (Precondition 5)

(Directly quoted from LSAT documentation)

Findings

- Supervisory visits are conducted for HSAs every month
- Not all supervisory visits occur as per scheduled due to transport, other commitments and seasonal barriers
- There is no defined incentive system

Recommendations

- Increase time for supervision so that community level is reached
- Provide transport to facilities for supervision to hard to reach areas
- Encourage logistics personnel through supervision and on-the-job training to report adequately and on time

Implication and significance

Motivation is an essential component of a functioning supply chain, as the tasks required of stock managers are often mundane and laborious. Supervision and feedback are proven sources of motivation for such workers. While high levels of supervision were reported by HSAs and supervisors, this survey found that supply chain management was only included as part of supervision around 50% of the time, and similarly found missing as part of feedback given to HSAs. The qualitative data collected by this assessment also showed a lack of an incentive system for HSAs, which may result in lower job satisfaction as time goes on.

Recommendations

The following preliminary recommendations are proposed for consideration by stakeholders. The recommendations do not necessarily represent the intervention strategy for the SC4CCM project; rather, some of the issues that should be addressed have been highlighted for all stakeholders to consider. The SC4CCM project has endeavoured to suggest stakeholders who could take a lead role in seeking to realize each of the recommendations. However, the successful implementation of these recommendations will hinge on close collaboration from all partners in CCM and the supply chain system at all levels.

The SC4CCM project has isolated priority issues for intervention targeting unique challenges faced by community health workers and that could significantly improve product availability at the HSA level. These are summarized in a separate concept note.

The following list of recommendations is based on a preliminary analysis of the data and is proposed for MOH and stakeholder consideration:

1. **Conduct annual quantifications** that consider and clearly reflect the specific needs of community case management. The result of these quantifications should be used to plan for procurement and to identify gaps in funding for CCM commodities so as to advocate to donors and development partners, as well as policy-level government staff, on the level of funding required to procure enough products to fill the national pipeline for CCM products. In addition, the quantification results should be used to monitor the national stock status throughout the year so that action can be taken as necessary to prevent potential stock imbalances. The MOH, through Health Technical Support Services (HTSS) - Pharmaceuticals and in close collaboration with the IMCI Unit, is proposed to lead in the quantification of CCM products, procurement and supply planning, as well as stepping up efforts to lobby for resources to meet full CCM product pipeline needs with donors and other development partners, as they already do with other products.
2. **Enhance the logistics management information system (LMIS)**, potentially using modern technology-based systems, which increase visibility of data from the community level, to enable wise decisions to be made throughout the supply chain. If good quality data is available and used this could enhance planning; forecasting; advocating efforts to increase funding levels for procurement, accountability and monitoring of supply chain performance; plus more. JSI, through the SC4CCM project, is committed to exploring this option by testing in several districts in order to draw lessons on what works and under what conditions, and work closely with partners and complement existing knowledge to set up the necessary platform for MOH and partners to take demonstrated successful practices to scale.
3. **Consider other transport options** that are appropriate for the volume and weight of supplies and the distance and road conditions. It is recommended that transport options be considered, such as a product delivery transport model, that reduces the burden of carrying a large volume of products by HSAs and also eliminates the opportunity cost associated with HSAs collecting supplies at the expense of attending sick children at their village clinic, or financing bicycle taxis from their pockets where they do not have own bicycles. Through the SC4CCM project, JSI plans to explore this option in order to identify a more appropriate transport delivery model that meets both current HSA supplies load as well as anticipated future supply needs, given the progressive expansion in the numbers of products that are managed by HSAs in the community.

4. **Develop strong national supervision and feedback procedures** around supply chain management as only moderate levels of supervision and feedback associated with supply chain management were evident. The SC4CCM project proposes a greater collaboration with HTSS and IMCI Unit in exploring enhanced management practices package that could be tested through the SC4CCM project in a few districts to identify practices that strengthen the supervision and feedback system currently in place.
5. **Increase commitment from DHMT to maintaining sufficient supplies at the community** at all times for treatment of sick children. Variability of product availability by district is potentially due to different priorities of the management within those districts. Increasing commitment to maintaining sufficient supplies at the community at all times for treatment of sick children by the DHMT could potentially impact product availability. High performing districts, health centre staff and HSAs who maintain adequate supplies of CCM products should be publicly recognized for their commitment to reducing childhood mortality. The SC4CCM project proposes that HTSS-Pharmaceuticals continues current dialogue with DHMTs over drug budget management and resource allocation/expenditure analysis at district-level, and emphasize on the need for DHMTs to commit to a full CCM supply. As part of regular supervision and management of districts drug supply, MOH, through the appropriate division/unit (HTSS), can include CCM product stock out severity indicators as part of DHMT performance assessment, which could be shared in the appropriate forum and good performing districts recognized accordingly. The SC4CCM project is interested in working with MOH/HTSS to explore this DHMT commitment to full supply CCM management oversight improvement option.

These recommendations are specific to the HSA level and have been drawn from preliminary analysis of the data. The second step is to do secondary analysis on the data that considers more of the preconditions in the Theory of Change and to develop a country specific Theory of Change that will result in a more comprehensive list of recommendations for strengthening the whole CCM supply chain.

Appendix A: List of Contacts

List of LSAT Workshop Participants

Name	Title
Godfrey Kadewele	MOH HTSS - Deputy Director of Pharmaceuticals
Samuel Chirwa	MOH Senior Logistics Officer – HTSS-Pharmaceuticals
Humphreys Nsona	MOH IMCI Program Manager
Chikondi Kadawati	CMS, Head, Supply Chain Management
Emmilius Kandapo	CMS, CMS, Procurement Officer
Benjamin Banda	CMS, Pharmacy Technician
D.K Mdoka	CMS, Stores Officer
Billy Mwapasa	CMS, PIC RMS South
C. Gundaphiri	CMS, PIC RMS Central
Romas Banda	Save the Children, Logistics Officer
Alex Mwase	CHAI, Procurement Specialist
Dr. Jobiba Chinkhumba	Malaria Alert Centre, Principal Investigator
Towela Maleta	Malaria Alert Centre, Supervisor
John Mugawa	IMCI Coordinator (Clinical), Chikwawa District
Benard Mizika	HSA Supervisor, Dowa District
Roy Makaika	Pharmacy Technician, Mulanje District
Raphael L. Piringu	District Health Officer, Phalombe District
Blessings Makono	HSA, Salima District

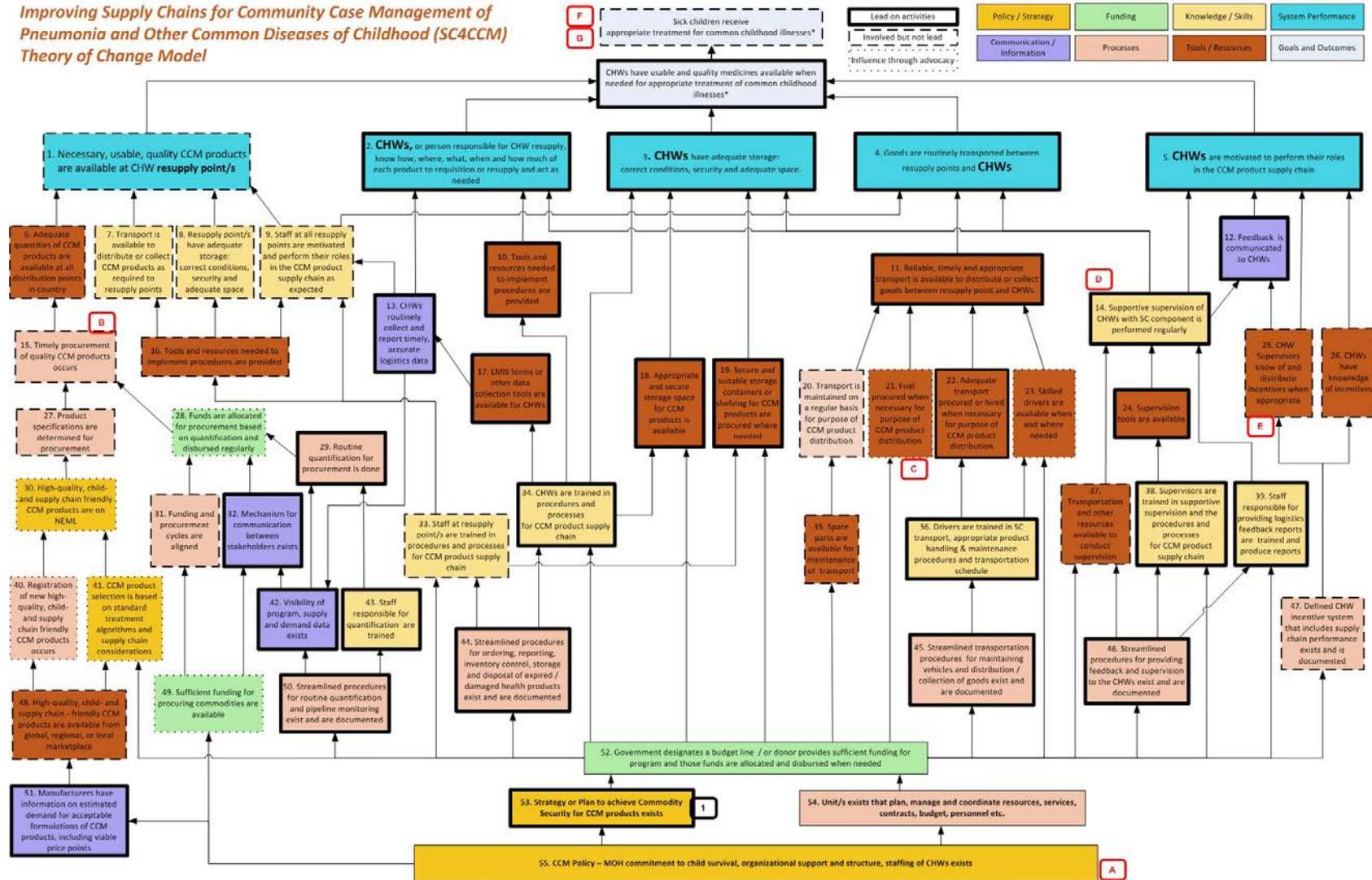
Malawi Community Health Supply Chain Baseline Assessment Report

List of Key Informant Interviews

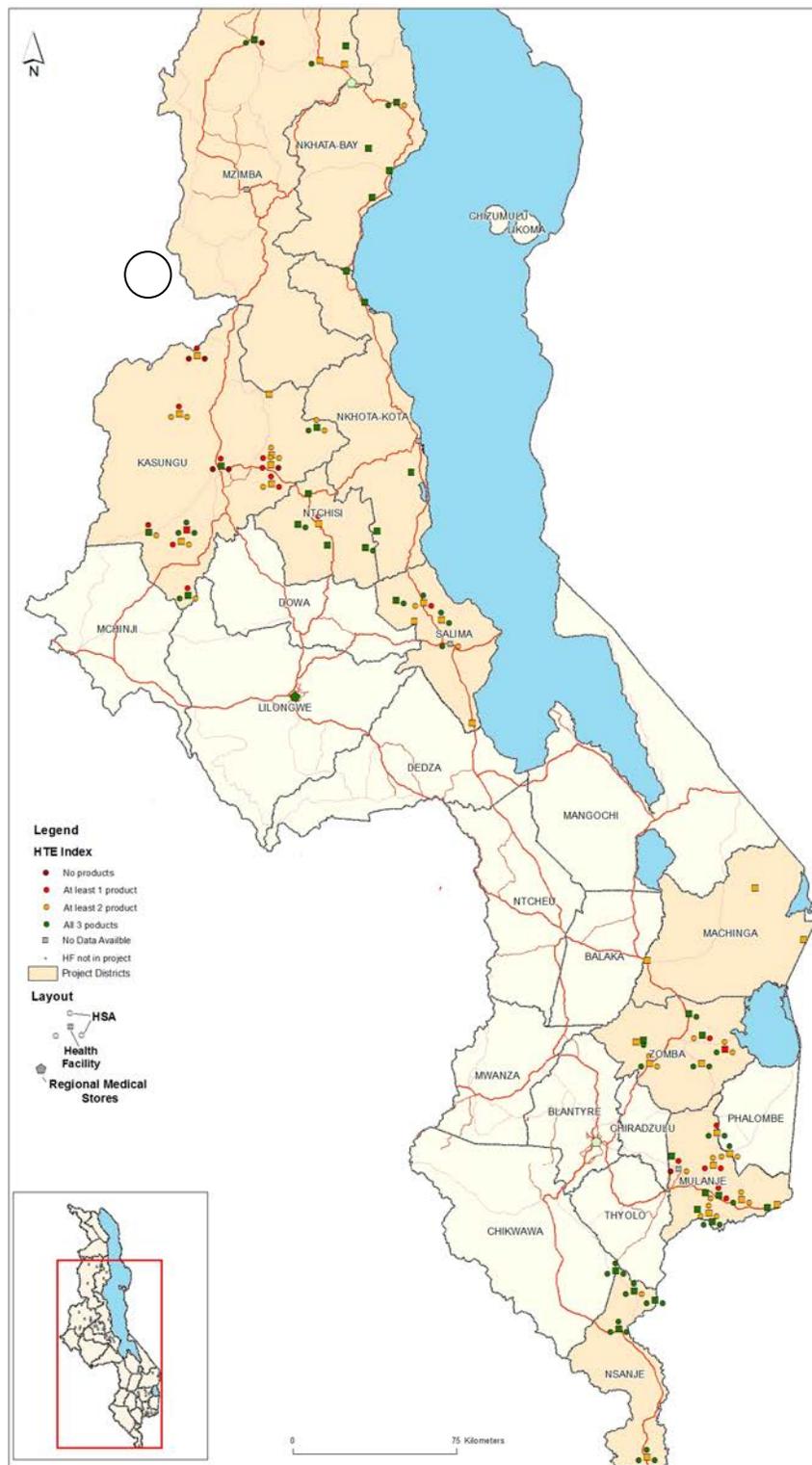
Name	Title	Organization
Dr. Ann Phoya	Head of SWAP Secretariat	MOH
Mr. Hudson Nkunika	Deputy Director of Planning & Policy	MOH
Godfrey Kadewele	Deputy Director of Pharmaceuticals	HTSS - MOH
Francis Chifulumira	Controller	Central Medical Stores
Patrick Nkunika	Deputy Director for Procurement	CMS
Humphreys Nsona	Program Manager	IMCI Unit
Mrs Dalitso Kangombe	Nutrition Unit	MOH
John Sandee	Deputy Manager	NMCP
Fannie Kachale	Program Manager	Reproductive Health Unit
Robert Mahala	CCM Coordinator	PSI/Malawi
Gunther Baugh	Regional Malaria Program Manager	PSI
Gunda Andrews	Child Health Program	CHAI
Tiyese Chimuna	CCM Program Officer	Save the Children
Joby George	Health Manager	Save the Children
Sandra Mapemba	Programme Officer	UNFPA
Samayog Karmacharya	Supply Officer	UNICEF
Henry Neufville	Logistics Officer	UNICEF
Desiree Nhengo	Director	CHAM
Rose Kumwenda-Ng'oma	Acting Director	CHAM
Barbara Chibambo	CTC Programme Manager	Concern Worldwide
Teresa Banda	Valid Nutrition Country Manager	Valid Nutrition
Mr. Botha	Valid Nutrition Commercial Manager	Valid Nutrition
Jayne Waweru	Country Director	USAID DELIVER Project
Willy Kabuya	Malaria Logistics Advisor	USAID DELIVER Project
Dr. Chimphambano	DHO-Mulanje	Mulanje District Health Office
Dr. C. Mulambia	DMO-Zomba	Zomba District Health Office
Mr. Kasela	Deputy DHO-Salima	Salima District Health Office
Dr. Chirambo	DHO-Ntchisi	Ntchisi District Health Office

Appendix B: SC4CCM Theory of Change

Improving Supply Chains for Community Case Management of Pneumonia and Other Common Diseases of Childhood (SC4CCM) Theory of Change Model



Appendix C: Map of Product Availability of 3 Key CCM Products in Malawi



Product availability: Green dots represent facilities or HSAs that have all three key products in stock on the day of visit. HSAs have all three key products in stock while the resupply point is missing one or two of the key products.

References

USAID | DELIVER PROJECT, Task Order 1. 2009. *Logistics System Assessment Tool (LSAT)*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 1.

USAID | DELIVER PROJECT, Task Order 1. 2008. *Logistics Indicators Assessment Tool (LIAT)*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 1.



GOVERNMENT OF MALAWI

MALARIA
ALERT
CENTRE 



JSI Research & Training Institute, Inc.
1616 Fort Myer Drive, 11th Floor
Arlington, VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
Internet: www.jsi.com

